

REMARKS

Claims 15-29, 31 and 32 are presently in the application. Claims 1-14 and 30 have been canceled.

Claims 15-23, 29, 31 and 32 have been rejected under 35 USC 103(a) as unpatentable over Fraser et al.

Reconsideration of this rejection is respectfully requested.

Claim 15 is directed to a method for sterilizing vessels, comprising exciting a plasma in an interior region and at an exterior region of a vessel by electromagnetic oscillations, wherein the plasma sterilization in the interior region of the vessel and at the exterior region of the vessel are performed at different times by selective excitation of the plasma, **the selective excitation of the plasma being effected by separate control of the pressure inside and outside the vessel (2)**, with the result that the plasma sterilization is performed in various regions of the walls of the vessel (2) in which plasma excitation takes place as a result of a pressure sufficiently below atmospheric pressure.

In the examiner's statement of the reasons for the rejection, the examiner has not addressed the step high-lighted above. In the invention defined by claim 15, the plasma is selectively excited on the inside and outside of the vessel by separate control of the **pressure** inside and outside the vessel. Unlike Fraser et al, in the applicants' invention, no continuous plasma flow is generated. In applicants' invention, the gas generating the plasma under suitable conditions is located in both the chamber 3 and the interior of the vessel. The pressure prevailing in the chamber 3 is adjusted, in the exemplary embodiment of applicants' Fig. 1, by the pump

9, while in the exemplary embodiment of applicants' Fig. 2, the pressure is controlled via the gas supply 11. Regardless of the adjustment of the pressure in the interior of the chamber 3, separate means 6 (Fig. 1) or 10 (Fig. 2) are provided, which independently of the pressure adjustment within the chamber 3, vary the pressure in a purposeful way inside the vessel 2 to be sterilized. The crux of applicants' invention resides in the control of the pressure in the interior of the chamber 3 and inside the vessel 2 independently of one another. This feature of the invention is expressed in claim 15 by the language "the selective excitation of the plasma being effected by separate control of the pressure inside and outside the vessel (2)."

Fraser does not teach or suggest that plasma sterilization in the interior region of the oxygenators 2a, 2b, 2c and at the exterior region of the oxygenators are performed at different times by selective excitation of the plasma, the selective excitation of the plasma being effected by separate control of the pressure inside and outside the oxygenators.

The examiner has rejected claim 15 on the teachings of Fraser et al alone. No reference has been applied to show that it was known in the art to control the pressure in a purposeful way inside a vessel to be sterilized independently of the pressure inside the sterilization chamber, i.e., on the outside region of the vessel to be sterilized, so that plasma sterilization in the interior region of the vessel and at the exterior region of the vessel are performed at different times by selective excitation of the plasma. While the examiner concludes that it would have been obvious to sequentially introduce plasma into the inlets 20 and 24 using separately controlled plasma sources, this does not address the language of applicants' claim 15 which recites that "the

selective excitation of the plasma being effected by separate control of the **pressure** inside and outside the vessel (2).”

In Fraser, the pressure is not controlled with a view to a plasma generation. The plasma generation is effected solely by means of the RF oscillator 7. The pressure in Fraser controls only the quantity of the plasma gas that flows through the sterilization chamber (col. 1, ll. 54-58). On the other hand, Fraser discloses that the surface should be exposed to a certain low atmospheric pressure, to improve the sterilization (col. 3, ll. 44-48). However, controlling the excitation of the plasma by controlling the pressure in the interior of the vessel and at the exterior of the vessel to either excite a plasma in either the interior of the vessel or at the exterior wall of the vessel is neither disclosed nor made obvious by Fraser.

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Fraser et al does not teach or suggest a method for sterilizing vessels of the type recited in claim 15 in which the plasma sterilization in the interior region of the vessel and at the exterior region of the vessel are performed at different times by selective excitation of the plasma, the selective excitation of the plasma being effected by separate control of the pressure inside and outside the vessel. Accordingly, claim 15 and claims 16-23, 29, 31 and 32, dependent on claim 15, are not rendered obvious by the teachings of Fraser et al.

Claims 24, 25, 27 and 28 have been rejected under 35 USC 103(a) as unpatentable over Fraser et al in view of Hoeck (US 4,544,529) or Schultze (US 2,501,193). Reconsideration of this rejection is also requested.

Independent claim 24 is directed to an apparatus for sterilizing vessels comprising, inter alia, “a cone (4) providing a seat for mounting a vessel within said chamber, said cone (4) having a groove (5) on its exterior surface in the region of the seat of the vessel (2), and having conduit means for communicating, via a feed line (7), an interior region of a vessel seated on the cone with a gas supply (6) or pump (10) located outside the chamber (3).”

Independent claim 27 is directed to an apparatus for sterilizing vessels comprising, inter alia, “a transport box (30) having a plurality of holes (31) therein for receiving and transporting a plurality of vessels (2) into a chamber (3), and said vessels (2) being seated with their openings virtually in pressure-tight fashion, said transport box (30) including a bottom flange for communication with a gas supply (6) or pump (10) located outside the chamber (3).”

Hoeck teaches an apparatus for sterilizing baby bottles with steam using an egg cooker. To support the nipples and bottles within the egg cooker, Hoeck teaches an insert 3 having upstanding ribs 13 (see, Figs. 1 and 2) forming seats 7. Within each seat 7 for the bottles 8, a frustoconical funnel 15 delivers the steam rising through an opening 18 to a tube 10 which carries the steam close to the upper end of the bottle.

Schultze also teaches an apparatus for sterilizing baby bottles using a warmer including an adaptor (Fig. 4) formed with an inverted pan base 8 with an upright tube 9. The base has a flat top 10 formed with one or more grooves 11 so that when the baby bottle is inverted and supported on the top 10 steam from the dome 3 may exhaust into a chamber 12 of the adaptor base into the tube and into the housing T around the outside of the bottle.

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). None of Fraser et al, Hoeck and Schultze teaches or suggests an apparatus of the type recited in claim 24 including a cone providing a seat for mounting a vessel within a chamber, said cone having a groove on its exterior surface in the region of the seat of the vessel, and having conduit means for communicating, via a feed line, an interior region of a vessel seated on the cone with a gas supply or pump located outside the chamber or an apparatus of the type recited in claim 27 including a transport box having a plurality of holes therein for receiving and transporting a plurality of vessels into a chamber, and said vessels being seated with their openings virtually in pressure-tight fashion, said transport box including a bottom flange for communication with a gas supply or pump located outside the chamber. Accordingly, claims 24 and 27 and claims 25 and 28, dependent thereon, are not rendered obvious by the combined teachings of Fraser et al, Hoeck and Schultze.

Claim 26 has been rejected under 35 USC 103(a) as unpatentable over Fraser et al in view of Hoeck or Schultze in combination with Schroeder et al (US 6,328,928 or WO 98/30491).

Reconsideration of this rejection is also requested.

Claim 26 is directed to an apparatus for sterilizing vessels comprising, inter alia, a “chain link transportation means for supporting a plurality of vessels for transportation into a chamber (3), and a duct (23) acting as a suction removal or gas supply rail disposed as a vessel mount, on which the vessels (2) are carried virtually in pressure-tight fashion, and said duct (23) being connected for with a gas supply (6) or pump (10) located outside the chamber (3).”

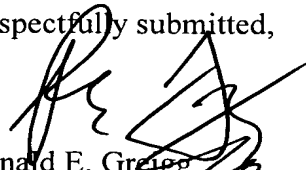
Schroeder teaches a method and a machine for preparing and filling containers with a product including conveying equipment 2 constructed as an endless chain conveyor and comprises bottle carriers 5, which can be swivelled relative to the conveying chains 3, 4 on the outside and locked in two different swiveling positions and which in each case have a number of bottle holders 7, disposed next to one another transversely to the transporting direction 6. The bottle carriers 5 form a modular unit, which extends transversely essentially over the width of the conveying equipment 2, and are supported consecutively at the conveying chains 3, 4 at mutually identical distances.

None of Fraser et al, Hoeck, Schultze and Schroeder et al teaches or suggests an apparatus of the type recited in claim 26 including a chain link transportation means for supporting a plurality of vessels for transportation into a chamber, and a duct acting as a suction removal or gas supply rail disposed as a vessel mount, on which the vessels are carried virtually in pressure-tight fashion, and said duct being connected for with a gas supply or pump located outside the chamber. Therefore, claim 26 is not rendered obvious by the combined teachings of Fraser et al, Hoeck, Schultze and Schroeder et al.

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Entry of the amendment and allowance of the claims are respectfully requested.

Respectfully submitted,



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